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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/032,995	10/29/2001	Niranjan Damera-Venkata	10011356	9206

7590 04/22/2005

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EXAMINER

MENBERU, BENIYAM

ART UNIT PAPER NUMBER

2626

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/032,995

Applicant(s)

DAMERA-VENKATA, NIRANJAN /

Examiner

Beniyam Menberu

Art Unit

2626

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 October 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 10/29/2001.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The abstract of the disclosure is objected to because "A printing method and system thereof." is not complete sentence on line 5. Correction is required. See MPEP § 608.01(b).

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: step 250 in Figure 2. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1, 2, 3, 5, 6, 7, 9, 10, 11, 12, 13, 15, 16, 17, 19, 20, 21, 22, 23, 25, 26, 27, 29, and 30 rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6867884 to Rozzi.

Regarding claims 1 and 21, Rozzi discloses a printing method comprising which can be implemented in a computer program (column 5, lines 30-41):
determining locations in a printed image for a plurality of first color dots and locations in said printed image for a plurality of second color dots (column 7, lines 46-54);
and
determining locations in said printed image for a plurality of third color dots, wherein said locations for said third color dots are dependent on said locations of said first color dots and said locations of said second color dots (column 7, lines 55-58).

Regarding claims 2, 12, and 22, Rozzi teaches all the limitations of claims 1, 11, and 21 respectively. Further Rozzi discloses the printing method of Claim 1 comprising:

- a) determining whether a dot of said first color is to be printed at a particular location (Figure 5; column 10, lines 28-47; column 11, lines 9-16);
- b) determining whether a dot of said second color is to be printed at said particular location (column 11, lines 20-28);
- c) subsequent to said steps a) and b), determining whether a dot of a third color is to be printed at said particular location, wherein printing of a dot of said third color at said particular location is dependent on satisfying a condition for deciding when overlap of a dot of said third color with a dot of another color at said particular location is acceptable (column 13, lines 4-14); and
- d) printing a dot of said third color at said particular location when said condition is satisfied and otherwise not printing a dot of said third color (column 11, lines 10-16).

Regarding claims 3, 13, and 23, Rozzi teaches all the limitations of claims 2, 12, and 22 respectively. Further Rozzi discloses the printing method of Claim 2 comprising: printing said dot of said third color at said particular location when a dot of said first color and a dot of said second color are not to be printed at said particular location (Rozzi teaches that dots of a color are printed when threshold is within dot placement range. In figure 5, the dot ranges do not overlap so it is possible that for example that the threshold for a third color can be within the range but the other colors' threshold can be out of range thus the third color is printed while the others are not. (column 10, lines 30-47; column 11, lines 1-16)).

Regarding claims 5, 15, and 25, Rozzi teaches all the limitations of claims 2, 12, and 22 respectively. Further Rozzi discloses the printing method of Claim 2 comprising:

not printing said dot of said third color at said particular location when a dot of said first color and a dot of said second color are to be printed at said particular location (Rozzi teaches that dots of a color are printed when threshold is within dot placement range. In figure 5, the dot ranges do not overlap so it is possible that for example that the threshold for a third color can be out of the range but the other colors' threshold can be within the range thus the third color is not printed while the others are printed. (column 10, lines 30-47; column 11, lines 1-16)).

Regarding claims 6, 16, and 26, Rozzi teaches all the limitations of claims 2, 12, and 22 respectively. Further Rozzi discloses the printing method of Claim 2 comprising: determining an amount of fill at said particular location when it is determined that a dot of another color is to be printed at said particular location (In figure 6, Rozzi calculates $K+C$ after determining the placement of the K dots in order to determine the placement of the C dots (column 12, lines 25-35)).

Regarding claims 7, 17, and 27, Rozzi teaches all the limitations of claims 6, 16, and 26 respectively. Further Rozzi discloses the printing method of Claim 6 further comprising:
not printing said dot of said third color at said particular location when there is less than 100 percent fill at said particular location (In figure 6, when printing the third color, the fill is going to be $K+C+M$. If $K+C+M$ is less than threshold max as shown in figure 6, then the third dot will not be printed if the threshold value of the third color is not in the dot placement range for the third color (between $K+C$ and $K+C+M$)).

Regarding claims 9, 19, and 29, Rozzi teaches all the limitations of claims 1, 11, and 21 respectively. Further Rozzi discloses the printing method of Claim 1 wherein said first color and said second color are selected from the group consisting of cyan and magenta and wherein said third color is yellow (column 14, lines 24-28; column 2, lines 25-32; Thus if the black channel is removed as taught by Rozzi, yellow channel would become the third channel.).

Regarding claims 10, 20, and 30, Rozzi teaches all the limitations of claims 1, 11, and 21 respectively. Further Rozzi discloses the printing method of Claim 1 wherein said printing is performed using an inkjet printer (column 1, lines 12-18; column 5, lines 7-9).

Regarding claim 11, Rozzi discloses a system used in printing, said system comprising:

a memory unit (column 5, lines 30-45); and

a controller coupled to said memory unit, said controller for executing a printing method (column 5, lines 30-45), said printing method comprising:

determining locations in a printed image for a plurality of first color dots and locations in said printed image for a plurality of second color dots (column 7, lines 46-54); and determining locations in said printed image for a plurality of third color dots, wherein said locations for said third color dots are dependent on said locations of said first color dots and said locations of said second color dots (column 7, lines 55-58).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 4, 8, 14, 18, 24, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6867884 to Rozzi in view of U.S. Patent No. 6637851 to Velde et al.

Regarding claims 4, 14, and 24, Rozzi teaches all the limitations of claim 2, 12, and 22 respectively. Rozzi discloses printing said dot of said third color at said particular location when a dot of said first color and a dot of said second color are not to be printed at said particular location (Rozzi teaches that dots of a color are printed when threshold is within dot placement range. In figure 5, the dot ranges do not overlap so it is possible that for example that the threshold for a third color can be within the range but the other colors' threshold can be out of range thus the third color is printed while the others are not. (column 10, lines 30-47; column 11, lines 1-16)). However Rozzi does not disclose the printing method of Claim 2 further comprising:
performing error diffusion to modify an intensity value of said dot of said third color resulting in a modified third color intensity value for said dot of said third color;
limiting said modified third intensity value to a predefined range; and
printing said dot of said third color at said particular location when a dot of said first color and a dot of said second color are not to be printed at said particular location and

when a condition based on said modified third color intensity value is satisfied, and otherwise not printing said dot of said third color.

Velde et al disclose the printing method of:
performing error diffusion to modify an intensity value of said dot of said third color resulting in a modified third color intensity value for said dot of said third color (column 6, lines 20-55);
limiting said modified third intensity value to a predefined range (column 7, lines 39-55);
and
printing said dot of said third color at said particular location when a dot of said first color and a dot of said second color are not to be printed at said particular location and when a condition based on said modified third color intensity value is satisfied, and otherwise not printing said dot of said third color (column 10, lines 30-47; column 11, lines 1-16. Thus Rozzi in combination with Velde et al can implement the method of printing third color when modified third color is within dot placement range and the other colors are out of dot placement range.).

Rozzi and Velde et al are combinable because they are in the similar problem area of halftone dot printing.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to combine the error diffusion method of Velde et al with the halftone dot printing system of Rozzi to implement error diffusion of halftone dot placements.

The motivation to combine the reference is clear because error diffusion as taught by Velde et al is necessary to account for errors due to quantization in printing (column 1, lines 23-37).

Regarding claims 8, 18, and 28, Rozzi teaches all the limitations of claims 6, 16, and 26 respectively. Further Rozzi in view of Velde et al disclose the printing method of Claim 6 further comprising:

performing error diffusion to modify an intensity value of said dot of said third color resulting in a modified third color intensity value for said dot of said third color (Velde et al: column 6, lines 20-55);

performing error diffusion to modify an intensity value of said dot of said first color resulting in a modified first color intensity value for said dot of said first color (Velde et al: column 9, lines 21-29); and

printing said dot of said third color at said particular location when there is greater than or equal to 100 percent fill at said particular location (Rozzi: column 12, lines 36-49) and when a condition based on said modified third color intensity value and said modified first color intensity value is satisfied (Rozzi: In figure 6, when the K+C+M overflows as in reference 92, 94, the third dot can be printed if the threshold is maintained between 90,96 and 92 and 94.), and otherwise not printing said dot of said third color (In figure 6, if the threshold value is outside the region 90-96 and 92-94 no printing is performed.).

Other Prior Art Cited

1. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. Patent Application Publication No. US 2003/0011794 A1 to Yao et al disclose method for dot placement error compensation.

U.S. Patent No. 6483606 to Klassen et al disclose method of error diffusion.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Beniyam Menberu whose telephone number is (571) 272-7465. The examiner can normally be reached on 8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on (571) 272-7471. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the customer service office whose telephone number is (571) 272-2600. The group receptionist number for TC 2600 is (571) 272-2600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only.

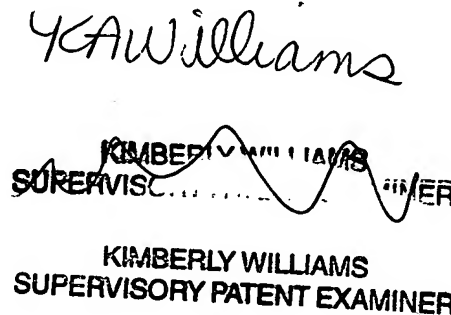
For more information about the PAIR system, see <http://pair-direct.uspto.gov/>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent Examiner

Beniyam Menberu

BM

04/14/2005

YKA Williams

KIMBERLY WILLIAMS
SUPERVISORY PATENT EXAMINER